Audio Course

LEARNING EXPRESS™

How to operate the
ATARI 600XL 800XL
Home Computer

Includes 1 Spoken Voice Cassette plus
1 Program/Data Cassette and
Quick Reference Guide

QUICK REFERENCE GUIDE

Written by Jack Klasey
and Produced by Lee McFadden

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FlipTrack® Learning Systems

Editor	Janice S. Rinehart
Graphics	Dale Janzen
	Here Graphics, Inc.
Sound Engineer	Jeff Beaumont

CONTENTS

INTRODUCTION

In a moment, you'll be sitting down with your own "personal" tutor. Under his friendly direction, you'll try out the many features of the Atari 600XL or 800XL home computer. You'll soon master your computer, as you test its calculating abilities, experiment with sounds and colors and sample some BASIC programming. You'll also have the opportunity to load and run pre-recorded programs from the program cassette included in this "Learning Express" package. You'll move at your own pace as you learn about your computer's capabilities, using a tested presentation which combines infinite patience with friendly guidance.

So You're Not A Programmer

Great. Although your Atari 600XL or 800XL computer is a very capable machine, it was designed for the non-programmer. It is one of the new breed of computers that's ready to go to work the moment it's turned on. In this course, you'll sample the many directions you can take. Programming is one of these directions, but only one.

Do You Have What It Takes?

If you have an Atari 600XL or 800XL computer, a TV *(TV or monitor for the 800XL),* and an audio-cassette player for the instructional tape, then you have what it takes. We recommend an audio-cassette player with a digital counter, but it's not essential. If you want to load the pre-recorded programs into your computer, an Atari 1010 Program Recorder will be necessary — but you can learn all "the basics" from this course without it. Use a color TV if possible, because your Atari computer lets you work with a whole rainbow of colors.

I'd Rather Read a Book

Books certainly have their place, but when you're just getting started learning a new set of skills, there's no substitute for a sympathetic human being who speaks YOUR language, not "jargon." Audio instruction combines the human touch with privacy, unlimited patience *(you can repeat a section to your heart's content),* and carefully planned sequencing. Your attention is on your *computer* as you actively learn by listening and doing.

What's This FlipTrack Business All About?

FlipTrack is our patented format which lets you flip over the cassette periodically to investigate an optional topic that interests you, or to delve deeper into a topic introduced on the front side of the tape. You literally create your own, personalized course! Full track or fast track, the choice is yours. Nothing presented on the FlipTrack side is required for success on the front side.

I Have A Very Bad Memory

We know. That's why we've included this comprehensive Quick Reference Guide, which contains everything on the tape and a bit more, too. Use it as a handy reference.

Okay! When Do We Get Started?

Right now. Just put the instructional tape into your audio-cassette player and let it play. Enjoy!

HOW TO USE YOUR
ATARI 600XL/800XL COMPUTER

Requirements: Atari 600XL or 800XL Home Computer
TV switch box *(for use with TV set)*
AC Power adapter
TV set *(for the 600XL or 800XL)* or monitor
(for the 800XL only)

Audio-cassette recorder

Option: Atari 1010 Program Recorder

Connecting System Components

If using monitor with 800XL:

See Atari 800XL Owner's Guide for proper monitor-to-computer connection.

If using TV set with 600XL or 800XL:

1. Disconnect the **VHF** antenna leads from the set and reconnect them to the proper terminal(s) on the **TV switch box.** *(If your set has a single round connector, use the single threaded terminal on one side of the switch box; if it has flat twin leads, use the two terminal screws on the same side of the switch box.)* See the Atari Owner's Guide for examples of various connections.

2. Connect TV cable *(small black box with one long and one short lead)* to TV switch box *(long lead)* and to terminal marked "Switch Box" on computer *(short lead)*.

AC Adapter

Insert the small round plug from the AC Power Adapter in the terminal marked "Power IN" on the back of the computer. Plug power cord into outlet.

Starting Up Your Computer System

If using monitor:

Turn on monitor and let it warm up.

If using TV set:

1. Turn on TV and let it warm up.
2. Tune to either Channel 2 or Channel 3 *(whichever is weakest or is not used in your area.)*
3. Set the TV channel switch on the back of the computer to the same channel.
4. Move selector on TV switch box to "Computer."
5. Turn on the **power switch** located on the back of the computer at the left side. The light on the lower right corner of the keyboard should glow red.

The word **READY** and a small square *(cursor)* should appear in white in the upper left corner of the TV screen. Background color of the screen should be blue. The computer is now ready to accept commands in Atari BASIC.

Using the Built-In Self-Test

Each time the Atari 600XL or 800XL is turned on, you can test its memory, keyboard, and audiovisual *(sound and graphics)* capabilities. **To run self-test:**

1. Type **BYE** and Ⓡ.*
2. Move through selections on Self-Test menu by pressing **SELECT** *(on far right side of keyboard).* Current selection flashes onscreen.
3. Press **START** to begin selected self-test.
4. Press **HELP** to leave selected self-test and return to menu.
5. Press **RESET** to end self-tests.

Note: The **OPTION** key, used in some **ready-to-run** programs, also can be used to bypass the normal screen and go directly to the self-tests. This is done by holding down OPTION while turning on the computer's power switch.

*In this guide, Ⓡ means press Return key.

Memory

Read-Only Memory or ROM is the computer's permanent memory. It stores BASIC and various instructions the computer needs to operate. The contents of ROM can be used, but cannot be changed.

Random-Access Memory or RAM is the temporary or working memory. It is used to store programs and other information (data) to be processed. It "remembers" only as long as the computer is turned on. All RAM contents are lost when the power is turned off.

Bytes are the units used to measure memory. One byte is capable of storing a single letter, number, space, or punctuation mark.Memory capacity is usually stated in Kilobytes (1024 bytes). Memory size can determine the programs which the computer can use.

FlipTrack Option

Keyboard Functions

Capital/Lowercase Letters: When computer is first turned on, you are in **capital letter mode.** To change to lower case mode, press **CAPS** key once *(press Shift keys for capital letters).*

Reverse Video: The **REVERSE VIDEO** key *(marked with a black triangle)* is an on/off switch. When pressed, letters are displayed in blue on a white background, instead of the "normal" white letters on blue. Pressing the key again returns the computer to the normal display.

Graphics Characters: When **CONTROL** is held down, the letter keys are switched to a "graphic characters set." They display different shapes that can be used for emphasis or to draw pictures and designs. To lock the keyboard in graphics mode, press **CONTROL** and **CAPS.** To return to capital letters, press **SHIFT** and **CAPS.**

International Characters: The keyboard can print the special characters used in foreign alphabets. **To set international character mode:**

1. Type **POKE 756,204** and ℝ.

2. Hold down CONTROL and type the appropriate letter keys. *(See international characters in Atari Owner's Guide.)*

3. To leave International Character mode: Type POKE 756,224 and ℝ, OR press RESET.

Correcting Mistakes

Cursor movement: The four **arrow keys** *(located on the right side of the keyboard)* are used in combination with the CONTROL key *(left side of keyboard)* to move the cursor onscreen.

To correct typing errors, use the arrow keys to move to letters you want to correct and use the following keys:

DELETE BACKSPACE: Deletes one character to the left of cursor position.

CONTROL and **DELETE BACKSPACE:** Deletes character at cursor position; characters to right of cursor move left.

SHIFT and **DELETE BACKSPACE:** Deletes entire program line or text line on which cursor is positioned.

CONTROL and **INSERT:** Makes space at cursor position to insert new characters.

SHIFT and **INSERT:** Makes new blank line above the line where cursor is located.

CONTROL and **CLEAR:** Clears the screen and positions cursor at upper left corner of screen. In direct mode, this clears screen and memory. In program mode, this clears screen but leaves program lines in memory.

Using the Program Recorder

1. Connect cable supplied with the Atari 1010 Program Recorder to the Input/Output port on the right rear side of the computer and to either of the I/O ports on the back of the Recorder.

2. Connect Power Supply to outlet.

Note: The red light on the front of the Recorder is not a "Power light." It will glow only when the PLAY, RECORD, REWIND or ADVANCE keys are pressed.

FlipTrack Option

Loading a Program

1. Press STOP/EJ on Recorder to open door and insert cassette, label side up. Close door.

2. REWIND tape to beginning and set counter to zero. ADVANCE tape past non-magnetized lead *(or to counter reading listed for program you wish to load)*.

3. Type CLOAD and ®.

4. Press PLAY on Recorder.

5. Press ®.

If program loads successfully, the Recorder will stop and READY will appear onscreen.

6. Press STOP/EJ to turn off Recorder.

Note: If Error 138 or Error 143 message appears onscreen, program did not load. Rewind to starting point, advance tape two more counts, and retry.

Ready-to-Run programs on Data Cassette

Programs included with this course for the Program Recorder are listed below along with their location on the tape.

Name	Location
Welcome	1∅
Number Guesser	3∅
Sailing *(block graph)*	5∅
Celebration	7∅
Combine-a-note	9∅

Note: Counter positions may vary slightly; location numbers show relative locations.

Running a Program

To tell the computer to carry out program directions: type **RUN** and ▣. When program is completed "Ready" and cursor will appear onscreen.

Stopping A Program

To stop a program: press **BREAK**.

To restart program: type **CONT** and ▣.

Program can also be stopped using **CONTROL** and **1 KEY** combination; to restart, use same combination.

Programming Commands

Number each program line and use only BASIC commands/ statements. All commands must be typed in **capital letters.**

Some common program commands/statements:

PRINT   Tells the computer to print on the screen the material which follows and is displayed in quotation marks.
Example: 1∅ PRINT "Hello"

?   Abbreviated form of PRINT. Example: 1∅? "Hello"

Note: If used alone, ? or PRINT will cause computer to print a blank line onscreen.

: *(colon)*   Separates BASIC commands on the same program line.
Example: 1∅?:?"Hello"
This line prints a blank line then the word Hello.

GOTO   Tells computer to jump to a specific line number.
Used to send computer to a specific program line.
Example: 3∅ GOTO 1∅

↰   Symbol used in program to clear screen. To type this symbol: Press **ESC,** then hold down CONTROL and CLEAR. Must follow a PRINT command and be in quotation marks.
Example: 1∅ ?" ↰ "

FOR/NEXT   A pair of statements often used to create a timing loop. Makes computer stop and count for a period of time before continuing to the next program line.
Example: 3Ø?"Hurry up"
           4Ø FOR T = 1 to 4ØØ: NEXT T
           5Ø? "and wait!"

INPUT   Makes computer wait for some information to be typed in by program user. The INPUT statement displays a question mark onscreen where information will be displayed.
Example: 9Ø ? "Type 1 to continue, 2 to stop"
           1ØØ INPUT A

IF/THEN   Conditional statement that tells computer to take action if certain condition is met. Often uses relational operators (> *greater than*, < *less than, or = equal to*). Often used following an INPUT statement.
Example: 11Ø IF A < = 1 THEN GOTO 1Ø
           12Ø IF A > = 2 THEN END

END   Tells computer to stop running program and return to READY.
Example: 36Ø END

Listing A Program

To see all program lines: type **LIST** and ⓡ.

To see individual program lines: type LIST *(line number)* and ⓡ.
Example: LIST 6Ø

To see more than one program line, but not entire program: type LIST *(line number), (line number)* and ⓡ.
Example: LIST 2Ø,7Ø

Clearing Memory

To clear computer's memory: type **NEW** and ⓡ.

Note: Pressing RESET will stop program and clear screen, but usually will not clear memory.

Using Your Computer For Math

Symbols used for mathematical operations include:

+	addition
–	subtraction
*	multiplication
/	division
∧	exponentiation

Order of Operations

For mathematics problems that involve more than one operation:

- Any operation in parentheses is done before operations not in parentheses *(when sets of parentheses are "nested," operations are done in order from innermost to outermost)*.
- Next, multiplication and division operations are done, working from left to right.
- Finally, addition and subtraction are done, working from left to right.

Using the Program Recorder to Save a Program

1. Insert cassette on which program will be saved.
2. Position tape at correct counter location *(see Loading a Program, page 10)*.

Note: Always write down the beginning and ending counter locations for the programs you save.

3. Type **CSAVE** and ⒭.
4. Press both PLAY and **RECORD** on Program Recorder.
5. Press ⒭.

Program is saved when the recorder stops and READY appears onscreen.

6. Press **STOP/EJ** to turn off the Recorder.

Using Your Atari for Graphics

Graphics characters can be used in direct mode *(see Keyboard, page 8)* or in programs you create.

There are nine different graphics modes which can be accessed by typing the graphics command and the graphics mode number.

Example: Graphics 2
        1Ø Graphics 2

Graphics Modes

Graphics Ø

Normal screen mode that appears when computer is turned on. 24 lines of 4Ø characters each are displayed on a blue background.

Graphics 1 and 2

Text screens that normally display text or graphic symbols in orange on a black background with a blue ''text window'' at the bottom. Graphics 1 displays 2Ø lines of 2Ø characters each; Graphics 2 displays 1Ø lines of 2Ø characters each.

Graphics 3 to 8

These graphics modes have screens with displays that range from 4Ø lines of 8Ø spaces each to 16Ø lines of 32Ø spaces each. The spaces are ''blocks'' which can be turned on or lighted to make pictures or designs.

Graphics Commands

PRINT #6;

In modes 3 through 8, tells computer to display material in graphics area of screen.

> Example: 1∅ PRINT "Hello" *(appears in text window)*
> 2∅ PRINT #6; "Hello" *(appears in graphics area)*

PLOT x,x

In modes 3 through 8, tells computer the starting point for a line of blocks to be lighted. Command must be followed by two numbers separated by a comma. First number is number of spaces over from left edge of screen; second is number of lines down from top of screen.

> Example: 2∅ PLOT 14,3

Note: Using a number greater than available on a given screen *(such as 95 in Graphics 3)* will cause a "cursor out of range" error message.

DRAWTO x,x

Tells the computer the end point of the line of lighted blocks that begins at the point specified in the PLOT statement. The DRAWTO statement can be placed in the same program line as the PLOT statement, but they must be separated by a colon. Several DRAWTO statements can be used as well; each succeeding one uses the end of the last DRAWTO as its beginning point.

> Example: 2∅ PLOT 14,3: DRAWTO 14,12:DRAWTO
> 3,12: DRAWTO 3,3: DRAWTO 14,3 *(draws a rectangle)*

Using Colors on Your Atari

Different numbers of colors can be used at one time in the various graphics modes: 1 and 2 allow four colors plus the screen color; 3, 5 and 7 allow three colors plus the screen color; Ø, 4, 6 and 8 allow one color plus the screen color.

Color Commands

COLOR x

The command COLOR followed by 1, 2 or 3 will display the contents of the succeeding program lines in one of the "default" colors: orange (1), light green (2) or dark blue (3) in graphics modes 3, 5 or 7.

Example: 1Ø GRAPHICS 3
          2Ø COLOR 1
          3Ø PLOT Ø,1Ø: DRAWTO 4Ø,1Ø

SETCOLOR x,x,x

Allows the use of different colors and shades of color. The first number *(Ø to 4)* selects one of Atari's **color registers**; the second *(Ø to 15)* specifies a color hue; the third controls brightness or luminance *(Ø to 14, even numbers only)* to provide different shades of the color.

Example: 1Ø SETCOLOR Ø,4,2 *(deep red)*
          1Ø SETCOLOR Ø,4,12 *(light pink)*

Note: The results of COLOR and SETCOLOR statements will vary from one graphics mode to another. Experiment with different combinations to get the colors you want.

Making Music and Sounds With Your Atari

The Atari has four "voices," which means that it can combine up to four musical notes or other sounds at a time. By using individual notes, or combining notes to make chords, you can actually write programs that will play tunes.

Sound Command

SOUND x,x,x,x

The first number *(Ø to 3)* specifies the voice to be used. The second is the pitch *(Ø to 255);* the lower the number, the higher the note or sound. The third number *(Ø to 14, even numbers only)* controls distortion, with 1Ø giving a pure musical tone. The last number *(1 to 15)* is the volume; the higher the number, the louder the sound.

Example: 1Ø SOUND Ø,121,1Ø,8 *("pure" Middle C)*

Note: In a program, the Atari will continue to play a note until it encounters another sound statement for the same "voice" or an END statement. When experimenting with SOUND in direct mode, stop the note or sound by pressing RESET.

Peripherals for Your Atari 600XL or 800XL Home Computer

Program Recorder — Save the programs you write on cassette.

Disk drive — Fast, convenient information access and storage.

Printer — Make printed copies of programs or other documents.

Modem — Communicate with other computers over telephone lines.

Joysticks, paddles — Can be used with game programs and arcade entertainment cartridges.

Note for Atari 400 or 800 computer owners: Most software programs written for these computers will run on the 600XL and 800XL home computers, although some won't. Also, programs you've written and saved on cassette will not run on the 600XL and 800XL. You can still use these programs if you purchase an inexpensive translation program from Atari. Contact Atari, Incorporated for further information.

Note on loading software: Because Atari BASIC is built into the 600XL and 800XL computers, it loads automatically when the computer is turned on. To load some other programs from diskette or cassette, override BASIC when you turn on the computer by holding down the OPTION key.

QUICK REFERENCE INDEX

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